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Examining the Export-led Growth Hypothesis: The case of Croatia

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Abstract

This paper examines the relationship between gross domestic product and exports of goods and services in Croatia between 1996 and 2012. The research results confirmed unidirectional Granger causality from the exports of goods and services to gross domestic product. Following the Engle-Granger approach to cointegration, long-term equilibrium as well as short-term correlation between the observed variables was identified. Exports of goods and services and gross domestic product (GDP) in Croatia move together. If the two observed variables move away from equilibrium, they will return to their long-term equilibrium state at a velocity of 24.46% in the subsequent period. In accordance with the results, we found evidence supporting the export-led growth hypothesis in Croatia. As the outcomes indicated, to recover the economy, Croatia should put more emphasis on the development of exporting sectors.

Keywords: gross domestic product, export, Croatia, Granger causality

1 Introduction

There are extensive discussions regarding relationships between exports and economic growth (Giles & Williams, 2000), and there are four possible outcomes of investigating that relationship (Chen, 2007). First is the export-led growth hypothesis, which means that export growth causes economic growth. Export growth is typically considered one of the main determinants of an economy's growth in production and employment. Empirically, it refers to unidirectional causality from exports to gross domestic product (GDP). The second possible outcome could refer to the growth-driven export hypothesis, which postulates that a rise in GDP generally leads to a corresponding increase in exports, thereby empirically indicating unidirectional causality from GDP to exports. The third possible outcome is a bidirectional relationship between exports and economic growth. Finally, the fourth possible outcome is a neutral relationship between exports and economic growth.

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Most arguments in favor of an outward-oriented strategy emphasize trade openness by claiming that countries that increase their participation in international trade achieve long-term economic growth faster than countries that are less open to global trade (see, for example, World Bank, 1993). These arguments are often supported by the East Asian miracle, where the nexus between export and economic growth was evidenced during the last few decades of the 20th century.

A growing development gap can be identified between countries following the export-oriented path and those based on domestic market orientation, economic protectionism, and import-led (but sooner or later unsustainable) growth. However, for countries that would like to join the group of successful exporters with a certain time lag, the change from domestic demand-generated growth to export-oriented growth is by far not easy and even less self-evident (Inotai, 2013). Croatia belongs to the latter group of countries and relies on exports as one of its development pillars. Therefore, the main goal of this paper is to test the export-led growth hypothesis in Croatia by establishing the relationship between the exports of goods and services and GDP.

The paper consists of five parts. After the introductory part, the second part reviews the literature. The third part explains the methodology and data, and the fourth part provides the empirical analysis. The discussion and conclusion are included in the final part of the paper.

2 Literature Review

Many studies have tried to establish the causal link between export expansion and economic growth (Khalafalla & Webb, 2001). However, empirical research on the causality issue between export and economic growth has yielded contradictory results. Contradictions like these might be partly due to the different methods, variable selections, time frames, and frequencies (Kónya, 2006). The causal link between export promotion and economic development is neither straightforward nor universal (Sung-Shen, Biswas, & Tribedy, 1990).

Results of the study conducted by Doyle (1998) on the example of Ireland from 1963 to 1993 suggest that exports and GDP are cointegrated. She found evidence of short-run and long-run causality from exports to output. Meanwhile, Chen (2007) assessed the validity of the export-led growth and growth-driven export hypotheses in Taiwan by testing Granger causality using the vector error correction model and the bounds testing methodology. The results indicated that a long-run level equilibrium relationship exists among exports, output, terms of trade, and labor productivity of the model. In addition, a bidirectional causal relationship exists between exports and output in Taiwan. These results attest to the advantage of the export-led growth strategy for further growth in Taiwan (Chen, 2007).

Greenway, Morgan, and Wright (1999) showed that a strong positive relationship exists between real export growth and real output growth on a sample of 69 countries for the 1975–1993 period. They also showed that the composition of those exports is important in determining the strength of growth. Paul and Chowdhury (1995) found evidence of Granger causality running from exports to GDP growth in Australia for the 1949–1991 period, implying that the expansion of exports promotes economic growth in Australia.

McCarville and Nnadozie (1995) concluded that the Granger causality test confirmed the relationship between export growth and GDP growth in the Mexican case, as stated by development theory. In addition, Liu, Burridge, and Sinclair (2002) found bidirectional causality among economic growth, foreign direct investment (FDI), and exports in China based on monthly data between 1981 and 1997. According to the authors, these three variables appeared to be mutually reinforcing under the open-door policy.

Narayan, Narayan, Prasad, and Prasad (2007) examined the export-led growth hypothesis on a sample from Fiji (1960–2001) and Papua New Guinea (1961–1999). Their findings suggested that, for Fiji, there is evidence of export-led growth in the long run and, for Papua New Guinea, there is evidence of export-led growth in the short run.

Ekanayake (1999) used cointegration and error-correction models to analyze the causal relationship between export growth and economic growth in eight Asian developing countries for the 1960–1997 period. The results showed bidirectional causality between export growth and economic growth in seven of the eight countries in the sample. Ekanayake's (1999) evidence showed short-run Granger causality running from economic growth to export growth in all observed cases except one (i.e., Sri Lanka). In addition, despite the strong evidence for long-run Granger causality running from export growth to economic growth in all cases, evidence of short-run causality running from export growth to economic growth occurred in only two cases: Indonesia and Sri Lanka.

Biswal and Dhawan (1998) found that, in Taiwan between 1960 and 1990, the evidence indicates bidirectional causality, meaning exports and growth mutually reinforce each other. Their research further demonstrated that the causality testing results are very sensitive to model selection and to omitting variables. However, tests conducted

by Afxentiou and Serletis (2000) on a sample covering 50 developing countries between 1970 and 1993 showed that export growth was not an engine of growth, not even in the cases of the Asian tigers. Their research did not support the hypothesis that export growth led to gross national product (GNP) growth in a Granger sense. Within the entire sample, only Indonesia and Oman appeared to exhibit reliable causality from export growth to GNP growth, and it is likely that their dependence on oil exports produced the obtained outcome. Causality tests from import growth to GNP growth also found that only Pakistan exhibited causality from import growth to GNP growth (Afxentiou & Serletis, 2000).

Asafu-Adjaye and Chakraborty's (1999) research on the sample of four less developed countries (i.e., India, Nigeria, Fiji, and Papua New Guinea) raised doubts about policy recommendations for the less developed countries based on the export-led growth hypothesis. Furthermore, Sharma and Dhakal (1994) investigated the *prima facie* causal relationship between the exports and output growth in 30 developing countries between 1960 and 1988. Of the 30 countries, a feedback *prima facie* causal relationship between export growth and output growth was found in only five countries, whereas export growth *prima facie* caused output growth in six other countries. Output growth *prima facie* caused export growth in another eight countries, and no causal relationship was observed between output growth and export growth in the remaining 11 countries. The authors also did not find any systematic pattern in the results of low-income, middle-income, and upper middle-income countries.

Kónya (2004a, 2004b) investigated the possibility of export-led growth and growth-driven export by testing Granger causality in 25 Organization for Economic Cooperation and Development (OECD) countries between 1960 and 1997. His results indicated that no causality exists between exports and growth in Luxembourg or the Netherlands; exports cause growth in Iceland; growth causes exports in Canada, Japan, and Korea; and bidirectional causality exists between exports and growth in Sweden and the United Kingdom. With less certainty, the results indicated that no causality exists between exports and growth in Denmark, France, Greece, Hungary, and Norway; exports cause growth in Australia, Austria, and Ireland; and growth causes exports in Finland, Portugal, and the United States. In Belgium, Italy, Mexico, New Zealand, Spain, and Switzerland, the results were too controversial to make a simple choice. Furthermore, some of the revealed causal relationships implied a negative delayed impact from exports to growth or vice versa.

Afxentiou and Serletis (1991) further found that no systematic relationship exists between exports and GNP in industrial countries for the 1950–1985 period. According to their research results, export growth is not the magic key to GNP growth, and many of the secrets continue to be hidden, refusing to reveal themselves in a straightforward quantifiable manner.

Ramos (2001) investigated the Granger causality among exports, imports, and economic growth in Portugal from 1865 to 1998. The empirical results did not confirm a unidirectional causality among the variables considered. In addition, Awokuse (2007) examined the impact of export and import expansion on growth in Bulgaria, the Czech Republic, and Poland. In the case of Bulgaria, the export-led growth hypothesis and growth-led exports hypothesis were confirmed. Empirical support existed for both the export-led growth hypothesis and import-led growth hypothesis in the Czech Republic. In Poland, only the import-led growth hypothesis was supported. These results indicate that simply focusing on the role of exports as the engine of growth might be misleading.

Tang (2006) found no long- or short-run causality between export expansion and economic growth in China between 1970 and 2001 in Granger's sense. However, he found that economic growth causes import expansion in the short run. Shan and Tian (1998) also tested the export-led growth hypothesis for Shanghai, using monthly time series data from 1990 to 1996. The research found unidirectional Granger causality running from GDP to exports, implying that exceptional economic performance in Shanghai during the 1990s was not propelled by export expansion, but by a set of domestic factors and foreign investment.

Hsiao (1987) investigated the existence and directions of causality between exports and GDP for Hong Kong, Taiwan, South Korea, and Singapore using Sims' unidirectional exogeneity test and Granger's causality test. Using the same set of data, applied tests were shown to have different causal implications, but the one common finding from the two tests was a lack of support for the hypothesis of unidirectional causality from exports to GDP. These results imply that the rapid economic growth of countries in the sample was not only achieved with the export promotion policy, but also derived from the domestic growth of industries and import substitution. The export-led growth hypothesis was rejected in the case of Australia as well (Shan & Sun, 1998).

Ahmad and Kwan (1991) found no causal link from exports to economic growth, or vice versa, on a sample of 47 African countries. Some subsets of countries provided weak support for causation running from economic growth to exports. The authors suggested the possibility of another independent factor that jointly influences both the growth of income and exports. However, the inclusion of omitted variables in the estimation of exports–income causality must remain arbitrary until a fully structural model that specifies the channels

by which exports affect income and vice versa is developed (Ahmad & Kwan, 1991).

As for Croatia, empirical research regarding the relationship between exports and economic growth is very scarce. Dritsaki and Stiakakis (2014) studied the relationship among FDI, exports, and economic growth in Croatia using annual time series data for 1994 to 2012. Several econometric models were applied, including the bounds testing (ARDL) approach and the ECM–ARDL model. The results confirmed a bidirectional long-run and short-run causal relationship between exports and growth.

Živković, Živković, and Grdinić (2014) analyzed the relationship among GDP, the imports-coverage ratio, FDI, and gross fixed capital formation in selected Central Eastern European countries using an error-correction model. The empirical results confirmed a positive long-run influence of the imports-coverage ratio, FDI, and gross fixed capital formation on GDP growth for all of the countries except Croatia. In the case of Croatia, significant negative feedback occurred between FDI and GDP growth in the long run, but positive feedback occurred in the short run.

At the micro level, Valdec and Zrnc (2014) used propensity score matching to test for causal effects of starting to export on firm performance in Croatian manufacturing firm-level data. The results confirmed that exporters have characteristics superior to those of non-exporters. In the main sample specification, pervasive evidence existed of self-selection into export markets, meaning that firms were successful years before they became exporters.

3 Methodology, Data, and Hypothesis

Economic time series are often non-stationary time series. At the same time, one of the assumptions for regression model estimation is time series stationarity. For that reason, we employed the Phillips-Perron Unit Root Test to check the stationarity characteristics of the observed time series. If the variables are of the same order of integration, as is the case here, it can be assumed that they are cointegrated. For the purpose of testing the relationship among the variables, the error correction model or the Engle-Granger approach to cointegration (Engle & Granger, 1987) was assumed. According to this approach, a linear regression model was defined on a non-stationary time series, and then the stationarity of residuals of the defined regression model was tested. If two time series were cointegrated, then there must be Granger-causality in at least one direction. In order to empirically check causality between exports and GDP in Croatia, the Granger causality test must be applied. In this case, the test usage was a consequence of data properties, as is discussed later in the text. We found our variables of interest integrated of the same order and decided to model a non-stationary time series. Considering the research objective and available data span, we found these methods to be the most appropriate.

The Granger (1969) causality test is one of the earliest and most frequently used methods developed to quantify causal effects in a time series. It is based on a generally acknowledged fact that the cause precedes the effect, which it consequently creates. It can be said that X Granger-causes Y if the past values of X can contribute to anticipating the future values of Y, which is better than using the past values of Y alone. The Granger causality test can be carried out for stationary or cointegrated time series.

The Granger causality test assumes the evaluation of the following model:

$$Y_t = \mu_t + \sum_{i=1}^{p} \alpha_i \cdot Y_{t-i} + \sum_{j=1}^{q} \beta_i \cdot X_{t-i} + \varepsilon_t$$

where μ_t is the deterministic component and ε_t is white noise. The null hypothesis can be tested using an F-test. If the *p*-value is lower than the defined level of significance, the null hypothesis is not accepted and the conclusion is that the first observed time series Granger-causes the second time series.

In order to explore Granger-causality, two variables were observed: GDP level in Croatia from 1996 to 2012 at constant prices and exports of goods and services for the same period at constant prices as well. Furthermore, we tested the relationship among other GDP components for the same time period. The variable description and data sources are provided in Table 1.

Table 1 Variable Description and Data Sources from 1996 to 2012

Variable	Description	Unit	Source
GDP	GDP in Croatia	000 HRK	Croatian Bureau of Statistics
EGS	Croatia's exports of goods and services	000 HRK	Croatian Bureau of Statistics
C	Personal consumption in Croatia	000 HRK	Croatian Bureau of Statistics
G	Government consumption in Croatia	000 HRK	Croatian Bureau of Statistics
I	Investment in Croatia	000 HRK	Croatian Bureau of Statistics

4 Empirical Analysis

Figure 1 shows the movement of GDP, exports of goods, exports of services, and exports of both goods and services for 1996 to 2012 in Croatia.

As shown in Table 2, we found GDP to be integrated at an order of two, while the exports of goods and services was integrated at the 1% empirical level of significance; thus, we assumed a long-term relationship between the observed variables.

Table 2 Phillips-Perron Unit Root Test

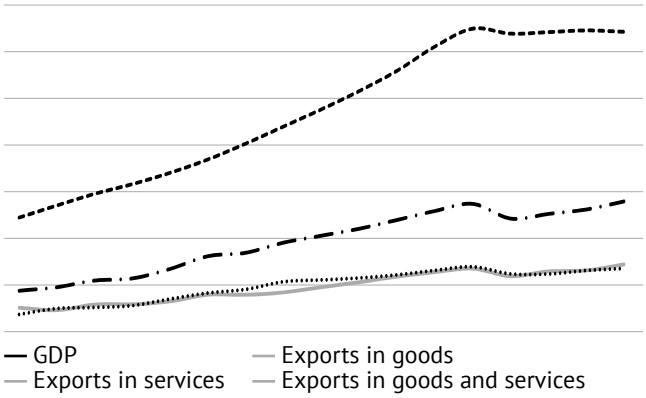
Variable		*p*-value
GDP	in levels around zero	0.99
	in levels around constant	0.61
	in levels with trend around constant	0.96
	first difference around zero	0.25
	first difference around constant	0.61
	first difference with trend around constant	0.80
	second difference around zero	0.00
EGS	in levels around zero	0.99
	in levels around constant	0.70
	in levels with trend around constant	0.84
	first difference around zero	0.03
	first difference around constant	0.02
	first difference with trend around constant	0.05
	second difference around zero	0.00
C	in levels around zero	0.99
	in levels around constant	0.46
	in levels with trend around constant	0.98
	first difference around zero	0.08
	first difference around constant	0.19
	first difference with trend around constant	0.39
	second difference around zero	0.00
I	in levels around zero	0.73
	in levels around constant	0.48
	in levels with trend around constant	0.96
	first difference around zero	0.01
G	in levels around zero	0.99
	in levels around constant	0.80
	in levels with trend around constant	0.75
	first difference around zero	0.17
	first difference around constant	0.18
	first difference with trend around constant	0.45
	second difference around zero	0.00

Source: Authors' calculations.

Table 2 also indicates that the investment variable is integrated at an order of one and the other variables are integrated at an order of two. In order to determine causality between the variables of the same integration order, we employed Granger causality tests. The results are presented in Table 3.

The results in Table 3 indicate causality from exports of goods and services to the GDP level in Croatia. Furthermore, the exports of goods and services Granger-cause

Figure 1. GDP level, exports of goods, exports of services, and exports of goods and services in Croatia, 1996 – 2012 (millions of HRK)



Source: Croatian Bureau of Statistics. Retrieved from www.dzs.hr (August, 30, 2014).

Table 3 Pairwise Granger Causality Tests

Pairwise Granger Causality Tests
Sample: 1996 - 2012
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
G does not Granger-cause C	16	1.21339	0.2906
C does not Granger-cause G		14.2909	0.0023
GDP does not Granger-cause C	16	0.00752	0.9322
C does not Granger-cause GDP		1.45383	0.2494
EGS does not Granger-cause C	16	7.16449	0.0190
C does not Granger-cause EGS		0.02769	0.8704
GDP does not Granger-cause G	16	20.6470	0.0006
G does not Granger-cause GDP		8.59429	0.0117
EGS does not Granger-cause G	16	12.4689	0.0037
G does not Granger-cause EGS		0.01042	0.9202
EGS does not Granger-cause GDP	16	10.6073	0.0062
GDP does not Granger-cause EGS		0.03242	0.8599

Source: Authors' calculations.

Table 4 Long-term Relationship between GDP and Exports of Goods and Services in Croatia

Dependent Variable: GDP
Method: Least Squares
Sample: 1996 – 2012
Included observations: 17
GDP = C(1) + C(2)*EGS

	Coefficient	Std. Error	*t*-Statistic	Prob.
C(1)	22449.58	9698.265	2.314804	0.0352
C(2)	2.216773	0.094976	23.34046	0.0000
R-squared	0.973204	Mean dependent var		237169.0
Adjusted R-squared	0.971417	S.D. dependent var		74876.43
S.E. of regression	12658.95	Akaike info criterion		21.84025
Sum squared resid	2.40E+09	Schwarz criterion		21.93827
Log likelihood	-183.6421	Hannan-Quinn criter.		21.84999
F-statistic	544.7770	Durbin-Watson stat		0.853790
Prob(F-statistic)	0.000000			

Source: Authors' calculations.

Table 5 Phillips-Perron Unit Root Test of the Residuals (US) in the Long-term Equilibrium Model

Null Hypothesis: US has a unit root
Exogenous: None
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. *t*-Stat	Prob.
Phillips-Perron test statistic		-2.025241	0.0442
Test critical values:	1% level	-2.717511	
	5% level	-1.964418	
	10% level	-1.605603	

Source: Authors' calculations.

Table 6 Short-term Relationship between GDP and Exports of Goods and Services in Croatia

Dependent Variable: D2GDP
Method: Least Squares
Sample (adjusted): 1998 – 2012
Included observations: 15 after adjustments

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
D2EGS	0.745318	0.136327	5.467143	0.0001
US(-1)	-0.244612	0.101890	-2.400742	0.0320
R-squared	0.692751	Mean dependent var		-967.4870
Adjusted R-squared	0.669116	S.D. dependent var		7273.988
S.E. of regression	4184.179	Akaike info criterion		19.63957
Sum squared resid	2.28E+08	Schwarz criterion		19.73398
Log likelihood	-145.2968	Hannan-Quinn criter.		19.63857
Durbin-Watson stat	2.157031			

Source: Authors' calculations.

personal consumption (C) as well as government consumption (G) while government consumption Granger-causes GDP. At the same time, GDP Granger-causes government consumption, and personal consumption Granger-causes government consumption (G).

We found no cointegration between the GDP level and government expenditure level (p-value = 0.12). Therefore, we defined the GDP level as the dependent variable and exports of goods and services as the independent variable in the assumed linear regression model. The estimated results are shown in Table 4.

As shown in Table 4, we found a strong relationship between GDP level and the level of exports of goods and services in Croatia. Changes in the GDP level in 97.32% of the cases move together with changes in the level of exports of goods and services in Croatia.

After we estimated the long-term equilibrium between the observed variables, we tested stationarity characteristics of residuals from the estimated long-term relationship model (US). As Table 5 demonstrates, at the 5% level of significance, we found stationary residuals in the long-term equilibrium model.

In order to model the short-term relationship between the observed variables, we applied a stationary time series. As variables are integrated at an order of two, we used the variables in the second difference and residuals in the long-term equilibrium model levels. The results are shown in Table 6.

The estimated results in Table 6 indicate that the GDP level and exports of goods and services move together. The coefficient with the variable US(-1) is significant and in accordance with theoretical assumptions (negative). If the two observed variables move away from equilibrium, they will return to equilibrium at a velocity of 24.46%. In other words, if the two observed variables move away from the state of their long-term equilibrium over time, in the next period they will speedily return to the state of their long-term equilibrium. In addition, there is a strong relationship between GDP development and exports of goods and services in the long term. Moreover, as the Granger causality test results indicate, the influence from exports to GDP might occur through personal consumption or government consumption. In order to check the assumptions of the illustrated model, White's test for homoscedasticity of variance, the Jarque-Bera test for normality of residuals, and the test for the autocorrelation of the residuals were run (see Appendix). Following these, it was established that the assumptions of the model were met at the 95% confidence level.

5 Discussion and Conclusion

Regarding the relationship between exports and economic growth, as has been noted, some analysts believe that the causality direction is from export to economic growth, which is expressed as the export-led growth hypothesis (Balassa, 1978; Bhagwati, 1978; Edwards, 1998). In addition, various studies support growth-led export in a way that the causality direction is from economic growth to export growth. Regarding the growth-led exports hypothesis, an increase in exports is supported through the benefits of efficiency caused by the increase in the national workforce's skill levels and technology advancement (Bhagwati, 1978; Krugman, 1984). These two approaches do not overlap. Studies dealing with developed countries usually show that trade openness can have a positive impact on economic growth, especially in the long run, through the import of high-tech products, spillover effects resulting from FDI (Grossman & Helpman, 1990), and various reforms and programs that aim to create better conditions for participation in international markets (Ram, 1987). There is also the possibility that no relationship exists or just a simple contemporaneous relationship exists between these two variables.

The research results presented in this paper suggest unidirectional causality from exports of goods and services to GDP level in Croatia. Furthermore, we found several influence channels from exports of goods and services to GDP. Exports of goods and services Granger-cause personal consumption (C), personal consumption (C) Granger-causes government consumption (G), and government consumption (G) Granger-causes GDP. Exports of goods and services Granger-cause government consumption (G), which Granger-causes GDP, and GDP Granger-causes government consumption (G). The empirical evaluation herein leads to the conclusion that, in Croatia, the growth of exports of goods and services Granger-causes GDP growth. Moreover, exports of goods and services and GDP in Croatia move together. If the two observed variables move away from equilibrium, they will return to equilibrium at a velocity of 24.46 % in the next period.

The results of this research suggest that an export-led growth model can be acceptable for achieving economic growth and development in Croatia. In accordance with the results, we found that Croatia should put more emphasis on exports development and improvement of its trade relations. However, this research does have limitations, as reflected in its coverage and scope. It would be interesting to examine in detail which measures or policies Croatia should apply. Furthermore, a study that would establish separate relationships between exports of goods and GDP as well as between exports of services and GDP would perhaps give different results.

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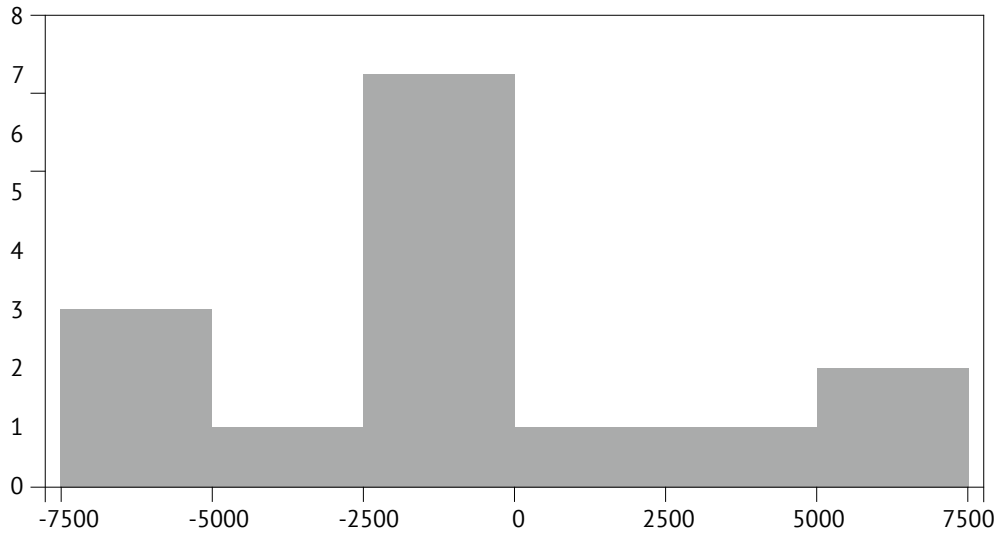
Appendix

Table 7 White Heteroskedasticity Test

F-statistic	2.873553	Prob. F(3,11)	0.0847
Obs*R-squared	6.590496	Prob. Chi-Square(3)	0.0862
Scaled explained SS	3.181509	Prob. Chi-Square(3)	0.3645

Source: Authors' calculations.

Figure 2. Jarque-Bera normality test



Source: Authors' calculations.

Table 8 Correlogram

Sample: 1998–2012
Included observations: 15

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.187	-0.187	0.6340	0.426
. **| . |	. **| . |	2	-0.270	-0.316	2.0627	0.357
. |* . |	. | . |	3	0.088	-0.043	2.2271	0.527
. | . |	. *| . |	4	-0.015	-0.102	2.2323	0.693
. |* . |	. |* . |	5	0.178	0.195	3.0366	0.694
. | . |	. | . |	6	-0.039	0.027	3.0795	0.799
. **| . |	. *| . |	7	-0.214	-0.120	4.5350	0.717
. *| . |	. **| . |	8	-0.101	-0.250	4.9095	0.767
. |* . |	. | . |	9	0.202	0.040	6.6479	0.674
. *| . |	. **| . |	10	-0.181	-0.296	8.3190	0.598
. | . |	. | . |	11	-0.032	-0.046	8.3855	0.678
. |* . |		12	0.119	0.020	9.5946	0.651

Source: Authors' calculations.

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Testiranje hipoteze o izvozno podprti rasti: primer Hrvaške

Izvleček

V članku preverjamo povezanost bruto domačega proizvoda in izvoza blaga in storitev na Hrvaškem v obdobju med letoma 1996 in 2012. Izsledki raziskave potrjujejo enosmerno Grangerjevo vzročnost od izvoza blaga in storitev do bruto domačega proizvoda. Skladno z Engle-Grangerjevim pristopom h kointegraciji smo ugotovili dolgoročno ravnovesje in kratkoročno korelacijo med opazovanimi spremenljivkami. Izvoz blaga in storitev in bruto domači proizvod se na Hrvaškem gibljejo skupaj. Če se gibanje opazovanih spremenljivk odmakne od ravnovesja, se v naslednjem obdobju vrnejo v dolgoročno stanje ravnovesja s hitrostjo 24,46 %. Skladno z izsledki smo potrdili hipotezo o izvozno podprti rasti na Hrvaškem. Rezultati nakazujejo, da bi morala Hrvaška za okrevanje gospodarstva večji poudarek dati razvoju izvoznih sektorjev.

Ključne besede: bruto domači proizvod, izvoz, Hrvaška, Grangerjeva vzročnost